Kensington/El Cerrito Amateur Radio News October 2019

KARO ECHO Newsletter

KARO ECHO

Serving the communities of El Cerrito and Kensington, California

Web: www.karoecho.net

Facebook: KARO ECHO facebook

Email: info@karoecho.net

Important Frequencies

KE Primary: 146.415 MHz Weekly Net, Thurs. 1900

KE Secondary: 146.475 MHz

4Cs Repeater: 145.110 MHz (TX down 600 with PL 82.5)

Monthly Meetings

In-person meetings

2nd Monday of each month 7:00 pm

Arlington Park Clubhouse, ***(new location)***
1120 Arlington Blvd,
El Cerrito, CA

The next meetings are:

Oct. 14th, 2019

Nov. 11th, 2019

Meeting minutes are on the website in the past events page. Thank you to Natalie KM6UCF.

What's New

KARO ECHO Meeting Oct. 14th, 1900 in El Cerrito

The KARO ECHO meeting start time continues to be 1900 (previously 1930). The location also continues to be the new Arlington Park Clubhouse location used for the past several months. The next meeting will be held on Monday October 14th at Arlington Park Clubhouse, 1120 Arlington Blvd, El Cerrito, CA. The training exercise portion of the meeting has been moved to the beginning of the meeting. The first hour of the meeting will be planning an training for the upcoming Oct 26th Simulated Emergency Test (SET) as well as discussion of potential participation in the Nov. 16th Light up the Bay (LUTB) countywide exercise.

KARO-ECHO Simulated Emergency Test (SET), October 26th, 0900-1200

KARO ECHO is planning our fall Simulated Emergency Test (SET) for Saturday October 26th from 0900-1200. Please plan to participate if your are available. Contact Howdy, KE6BEE ke6bee@arrl.net, ahead of the SET to coordinate your role in the exercise. Emphasis of this SET will be on neighborhood to neighborhood mutual aid and mobile operation. More details will be forthcoming, including announcements and exercises following the upcoming Thursday nets.

Ham License Class and VE exam in El Cerrito

KARO ECHO and the East Bay Amateur Radio Club (EBARC) are jointly sponsoring a Technician license course taught by Ken Fowler (KO6NO) which began Wednesday, Sept. 4, 2019, weekly from 6:30-9pm. At the conclusion of the class there will be a VE licensing exam on Nov. 13th (the exam is open to anyone who wants to take an exam or upgrade with self study). FCC examinations and license applications will be administered by the EBARC Volunteer Examiners for a fee of $15. Bring payment, photo ID and FRN number. The location for the class/exam is in El Cerrito at the Arlington Park Clubhouse, 1120 Arlington Blvd. 94530

LOCAL NETS

KARO ECHO NET

146.415 MHz Simplex

Thursday eve, immediately after the West Contra Costa RACES Net, but never before 1900 hours local time.

West Contra County ACS/RACES Net

145.110 MHz repeater

(TX down 600 with PL 82.5)

Thursday: 1845 local time

Contra Costa County HF EmComm/RACES Net

3893 KHz

Thursday: 1835 local time

American Red Cross of the Bay Area (ARCBA)

WW6BAY Repeater

443.975 MHz

TX =5 MHz, PL 100 Hz

Wednesday: 2000 local time

BOARD OFFICERS

President: Hal KK6NDF
Treasurer: Larry KK6GIO
Secretary: Natalie KM6UCF
Vice President Pro Tem: Don NI6A
Emergency Coordinator: Jamuel KM6HBO
Exec Board Member at Large, and newsletter editor: Howdy KE6BEE
Webmaestro: Rob K6RJM

What's New *(continued)*

Antenna Patch Boxes for El Cerrito Clubhouses

The installation of two antenna patch boxes on the Harding and Tassajara clubhouses is now complete. The Tassajara location also now has a rooftop GMRS antenna that is terminated in the patch box. The boxes have combination lock access and KARO-ECHO operators are invited to learn the combo (contact Howdy ke6bee@arrl.net) and use these antennas during Thursday for practice.

The intention is that radio operators can deploy to these locations with their own radio equipment and take advantage of the large roof-mounted gain antennas on the clubhouses where there may be assembly area activities happening in the event of an emergency.

Patch cords that can adapt to common hand held radios will be stored in the boxes (currently not in place), but it is also a good idea for each operator to have a stock of appropriate adapters and cables for this, and other, external antenna connection applications.

What's New *(continued)*

Solar power installed for the 4C repeaters

The three repeaters of the 4C's (Contra Costa Communication Club), WA6KQB, have an upgraded uninterruptible power supply system with solar panels and additional battery storage. There is now about 3.3kWh of total storage and 1600W (rated) solar generation. Jay, KJ6WSS, (with help from Edward, KM6UBY, and Mathison, KJ6DZB) built an impressive and very sturdy framework for the panels. Howdy, KE6BEE, wired up the panels and the charge controller.

It is roughly estimated that this configuration could keep up with more than 20 hours of repeater transmit time per day indefinitely, with at least average solar resource, and remain highly functional with many hours a day of operation under poorer conditions.

What's New *(continued)*

Action! - Take the CERT survey

El Cerrito/Kensington CERT is conducting a survey to help organize the trained CERT members in the community as well as recruit more. Please take this survey and spread the word about it to others in the community. It includes an opportunity to express interest in radio communications, as well as register for emergency alerts, get links to useful disaster related videos, and learn about local bulk purchase opportunities for disaster supplies like water storage containers. Every response helps our local CERT organization earn participation credits that qualify us for grant funding.

KARO ECHO Mobile Radio "Go-kit" Needs a Home

A fully featured mobile radio "go-kit" with large battery, antenna and accessories (including message forms and documentation) is available to be deployed somewhere in El Cerrito. We are looking for a secure but accessible storage location that has electricity for the battery float charger (although this could also be accomplished with a solar panel battery charger if the location receives a reasonable amount of sun). Ideally, we are seeking something like a lockable outbuilding in a backyard that could be easily reached in case of a disaster by more than one ham. Contact info@karoecho.net if you have ideas on locating the radio go-kit.

Contra Costa County Regional Radio Communication Exercise, Nov. 16

The Nov. 16th exercise called "Light up the Bay," decided to focus on organizing CERT based communication exercises in Contra Costa County. Details are still developing regarding possible participation in El Cerrito and Kensington.

Activities

Existing Ham Outreach Mailing

A letter was sent out to all existing hams in El Cerrito and Kensington to encourage them to become active with KARO ECHO. Thanks to Edward (KM6UBY) for preparing the list and all those who helped assemble the mailing. The El Cerrito Fire Dept. generously covering the postage for this mailing. A few new members have already joined since the mailing went out.

Weekly Net Control Rotation

Thanks go out to the volunteer stations who have been taking turns as Net Control Stations (NCS) each Thursday. This rotation has been working very well and everyone has been doing a great job. After a few recent changes, the regular NCS roster will have 9 operators. There are opportunities for others to fill in when a regular station has a scheduling conflict and there is always room to add more stations to the rotation. Download the new Net Script for NCS operators.

Callsign	Name	Assigned Dates (skipped: 7/4/2019 and 11/28/2019)						
KE6BEE	Howdy Goudey	6/20/2019	8/29/2019	10/31/2019	1/16/2020	3/19/2020	5/21/2020	7/23/2020
KK6NDF	Hal Graboske	6/27/2019	9/5/2019	11/7/2019	1/23/2020	3/26/2020	5/28/2020	7/30/2020
KM6HBO	Jamuel Starkey	7/11/2019	9/12/2019	11/14/2019	1/30/2020	4/2/2020	6/4/2020	8/6/2020
KK6GIO	Larry Vanselow	7/18/2019	9/19/2019	11/21/2019	2/6/2020	4/9/2020	6/11/2020	8/13/2020
K6RJM	Rob McNicholas	7/25/2019	9/26/2019	12/5/2019	2/13/2020	4/16/2020	6/18/2020	8/20/2020
KE6HCE	Armando Picciotto	8/1/2019	10/3/2019	12/19/2019	2/20/2020	4/23/2020	6/25/2020	8/27/2020
NI6A	Don Simon	8/8/2019	10/10/2019	12/26/2019	2/27/2020	4/30/2020	7/2/2020	9/3/2020
KM6TCB	Dave Roth	8/15/2019	10/17/2019	1/2/2020	3/5/2020	5/7/2020	7/9/2020	9/10/2020
KK6ZPM	Karen Fenton-Leong	8/22/2019	10/24/2019	1/9/2020	3/12/2020	5/14/2020	7/16/2020	9/17/2020

Below are the current scheduled dates for each operator. The KARO ECHO google calendar also has these assignments and can be found at the bottom of the events page. Add to your electronic calendar By pressing the "+GoogleCalendar" button in the lower right.

Action Item: Help create a deep pool of skilled NC operators. Please contact Howdy ke6bee@arrl.net if you are interested in taking a net control assignment.

Thursday Net Training Exercises

Following the net check-ins every Thursday at 1900, KARO ECHO usually runs a training exercise to learn and practice skills that are important for successful disaster communications. A list of training exercises is posted and maintained on the training page of the website. We continue to average 14 check-ins per week, with very strong growth in participation over the past 3 weeks with 18-20 check-ins. Thanks for your participation

About KARO ECHO

KARO ECHO is the name of the Kensington Amateur Radio Operators and the El Cerrito Ham Operators mutual benefit association, an all-volunteer non-profit group of amateur radio operators providing auxiliary communications for the cities of Kensington and El Cerrito in the event of a disaster. KARO ECHO works with CERT (Community Emergency Response Teams) in Kensington and El Cerrito, but is not an official part of the CERT program.

Monthly in-person meetings of KARO ECHO are on the 2nd Monday of each month at 7:00 pm at the Arlington Park Clubhouse, 1120 Arlington Blvd, El Cerrito, CA. The next meetings are:

- Oct. 14th, 2019
- Nov. 11th, 2019

Yearly dues are $30/year for individuals, $40/year for a family membership. Mail to:

KARO ECHO, PO Box 2025, 6324 Fairmont Ave, El Cerrito, CA 94530-3651

Please see our website for more information: **www.karoecho.net**

You can contact the KARO ECHO board by email: **info@karoecho.net**

KARO ECHO Facebook

The KARO ECHO **Group on Facebook** has a lot of good information, more than is contained on our website. There is a whole wide world of emergency communications information at https://www.facebook.com/groups/1451216838315743/ Check it out and be inspired of what we can do to help disaster victims in our community.

Weekly Training Net

The Karo-Echo Weekly Training Net meets every Thursday evening immediately after the West Co Co County RACES/ACS Net; but not before 1900 on 146.415 MHz Simplex. Details at https://www.karoecho.net/events

KARO-ECHO Frequencies

The KARO ECHO primary frequency is still 146.415 MHz simplex. **Our secondary frequency however has been changed to 146.475 MHz simplex** thus creating a 60 KHz spread between operating frequencies that will reduced adjacent frequency desensing.

KARO ECHO Dues

Action Item: Please send in your dues to KARO ECHO -- P.O. Box 2025 -- El Cerrito, CA. 94530-3651 or see Larry at this Monday's meeting at the Arlington Park clubhouse. You can still be a non-voting member of KARO ECHO without paying dues, but only licensed Amateur Radio Operators and dues paying members will be allowed to vote. So if you can't afford $30 for full membership (or $40) for family membership), please come and participate in any case. Dues cover our 510c3 registration, post office box, web page, station operating manuals and more. Your input on useful expenditures to aid emergency communications are welcome.

Outreach, Education and Licensing

VE exam in El Cerrito

A ham licensing exam will be held on Nov. 13th at 6:30 (open to anyone who wants to take an exam or upgrade). FCC examinations and license applications will be administered by EBARC volunteer examiners (VE) for a fee of $15. Bring payment, photo ID and FRN number. The location is in El Cerrito at the Arlington Park Clubhouse, 1120 Arlington Blvd. 94530

SET Video on YouTube

We are looking for volunteers to take the lead producing a video documenting the Feb 23 SET using assorted voice recordings, videos, photos, and narration. If you have any video editing or production skills (or you can recommend someone) please contact info@karoecho.net We need your help -- don't be shy.

CERT SET YouTube Video

See the CERT SET Youtube video link

https://www.youtube.com/watch?v=66DdgGLln4c&list=PLROOaUlKdrEgSID1bQJZojW3PzfURoEY-&index=144&t=0s

ELMERING

Elmering/Mentoring is available by request. Email info@karoecho.net

In the meanwhile, please check out the plethora of disaster radio communications topics at https://www.karoecho.net website and/or request specific literature to be created.

KAROECHO.Net Website

Especially, check out the EVENTS Page (https://www.karoecho.net/events) and the WORKSTREAMS drop-down menu which will lead one to an extensive training page that provides online learning at your own pace. Everything from the very beginning to advanced EmComm operations is detailed. The RESOURCE page has many excellent outside links.

- If you are on Facebook, contribute to the KARO ECHO Facebook Group Page at https://www.facebook.com/groups/1451216838315743/
- If you haven't already filled out the **JOIN** form please do. Find it as a drop down menu under "Get Involved" See https://www.karoecho.net/join
- A follow-through novice primer has been put on the website for new hams once they have bought their radio and want to learn more. See: https://drive.google.com/file/d/10J-569BRrx5adhA-hJGPeNITU6B9Yi6z/view
- Also a new Dual-Band antenna primer for new hams who want to graduate from the rubber-ducky world is at https://drive.google.com/file/d/1u_ozABBRYDJDACFJRTV_rxWF1WjCgW_I/view
- Note that the Tram 1480 gain dual band antenna is currently still available for $51 (no tax and free shipping) on ebay or from Home Depot. That and an inexpensive speaker tripod is a dynamite combination for portable operation. This antenna is equivalent to the Diamond X-200a antenna which sells at HRO for $125.00 before taxes and shipping.
- For newbies, please visit https://www.karoecho.net/workstreams/training and read the study materials. It is all there except for hands-on experience. Ask questions!
  On every Thursday evening net there will be a training session and/or discussion. Summaries of recent net events are found under our past events page at https://www.karoecho.net/events/past-events
- Note: See the **KARO ECHO Agenda** for our upcoming Monday, October 14th, 2019 Meeting see: https://www.karoecho.net/events the agenda will be made available no later than the Sunday immediately preceding the meeting.
- All recent KARO ECHO **Minutes** will be found at our **Past Events page** We are now including past Executive Board Minutes as well. Newsletters are on the Documents Page.

If you desire to be removed from this email list, please email info@karoecho.net

Technical Corner: Power Consumption, Solar and Batteries

The wide-spread pre-emptive Public Safety Power Shutdown (PSPS) event last week provided a good reminder of the importance of having a reliable power supply for your radio when grid power is interrupted by an earthquake, storm or even an extended PSPS. While the East Bay was not impacted as much as other areas, several KARO-ECHO operators were without power for about a day. Other areas in CA had no power for 3+ days. Serious earthquake and other scenarios could mean no grid power for more than a week. Here is some background information about radio power consumption and battery power with solar charging. Future KARO-ECHO meetings will include hands-on demos and more detail on these topics to help members prepare for communications during extended power outages.

Radio Power Consumption

Each radio may vary, but the following generalizations are derived from a series of measurements on a somewhat diverse selection of radios. At high power setting, most radios draw about 2-3 times more DC power than their RF power output (closer to 2 for ~50W radios and closer to 3 for ~5W radios, because there is some overhead consumption that is independent of transmit power). When transmitting, a typical 5W HT radio probably draws up to about 15W DC and a typical 50W base/mobile radio draws up to about 110W. The efficiency of a radio goes down (or the ratio of DC input power to transmitted RF power goes up) when turning to lower power settings because the fixed overhead loads of the radio stay the same, but you will always lower your overall power demand by setting to lower power, the RF output just drops faster than the DC power draw. As usual, the lowest power to successfully communicate is advised, both for RF etiquette and battery life management.

It is also worth considering the efficiency of any power converter in use. A ~12V radio can run directly off a ~12V battery without any converter, but an HT may operate at a lower voltage. You can have several dedicated packs for the design voltage of the radio, but usually larger capacity batteries will be at least 12V and may require a adapter to step the voltage down to the desired level for the radio. This can be done fairly efficiently with a DC-DC converter, or it can be done less efficiently with a heat dissipating voltage regulator.

Receiving takes a fraction of the power of transmitting. An HT may only draw 0.2-1W in standby or receiving, and those functions might draw as much as 10W for larger mobile/base station radios.

Measuring DC power demand of your radio can be done with a simple low cost device like this. You can also track usage over time (W-h consumed) with a device like this, allowing you to know the state of your battery capacity as you operate.

Technical Corner: Power Consumption, Solar and Batteries

Battery Storage and runtime

Batteries are typically rated in Amp-hours (A-h) to convey their capacity. You can multiply A-h by the voltage of the battery to get the Watt-hours (W-h). If you know the power demand of your radio in either in Amps or Watts you can divide either the A-h or the W-h by Amps or Watts, respectively, and you will have the number of hours the battery will deliver that load. Remember that the transmitting duty cycle (transmit time versus receive time) will likely be well under 50% for most radio operators, so you need to factor in an expected transmit duty cycle to determine the overall runtime of both receiving and transmitting.

One caveat is that for optimal long-term lifetime of the battery it is not recommended to regularly draw even a deep cycle lead-acid battery below 50% capacity. Lithium batteries are typically able to use about 80% of the rated capacity. They are also much lighter for the same amount of storage, and should have a longer cycle lifetime, but they cost more per unit of storage.

For instance, an HT powered by an external 12V 10 A–h battery may draw 1A in transmit and 0.03A in receive. This configuration would have about 8 hours of continuous transmit time, or 2 hours a day of transmitting for three days with the radio in receive the rest of the time.

Example of a 12A-h Lithium battery for $84

Solar Battery charging

For an extended outage, having the ability to recharge your battery storage helps reduce the total storage capacity you need. Solar panels are rated in instantaneous Watts under idealized solar conditions. It is typically the case that solar panel output, in good real world conditions, will be about 80% of the rated power output and this value will be lower when solar angles and intensity are poor, or if there is partial/total shading. On average, over a year, you can typically count on the equivalent of about 4 hours of “peak” performance per day. For a 30W panel (derated to 80%), that would be about 100W-h of charging a day, although it might be twice that in June/July and a small fraction on a cloudy day in the winter. This means you could recharge the useful capacity of a 12 V 10A-h lithium battery in one “average” day with a 30W panel. Much of the time it would easily do more, but it could also fall short, which is why for emergency use you typically want to oversize the solar panel capacity to provide for low generation contingencies. The size and weight of the panel will also be dependent on the need for portability, or it if is intended as power for a fixed location. Solar panels should have some charge control electronics between the panel and the battery to prevent overcharging. While charge controllers intended for lead-acid charge parameters have been most common over the years, there are some solar chargers specifically designed for Lithium batteries. Many Lithium batteries include internal Battery Management Systems (BMS) that allow using a typical sealed lead acid charge controller.

Example of a reasonably portable folding 80W Solar panel with charge controller for $120